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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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12/28/2001

Fabrice Devaux

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06/15/2006

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EXAMINER

WANG, QUAN ZHEN

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|---------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/028,919 | DEVAUX ET AL. | |
| | Examiner | Art Unit | |
| | Quan-Zhen Wang | 2613 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-8 is/are rejected.
- 7) ☐ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/28/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because there are multiple numberings for the same pads such as the number 5 in figure 1, the numbers 3, 4, and 6 in figure 2, and the numbers 3, 4, and 8 in figure 3. Use only one number to label each part. In addition, the y-axis of figure 4 should be more clearly labeled in a font that is easier to read. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Claim 1 is objected to because of the following informalities: lack of proper punctuations. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (U.S. Patent US 6,016,374) in view of Epwodh (U.S. Patent US 5,513,030).

Regarding claims 1 and 3, Adams discloses a method for adjusting delays between multiple channels of an optical WDM system including: Demultiplexing the signals with demultiplexer (fig. 1, WDM 110), delaying the individual signals individually between channels (fig. 1, phase controller 111; column 2, lines 45-47) and multiplexing the signals again (fig. 1, WDM 112; column 2, lines 20-25) for the next step; Remodulating the multiplexed signal (fig. 1, modulator 107) with a clock signal of high frequency (fig. 1, "electronic data in") and monitoring the remodulated signal with a photodetector (fig. 1, PD 118); Measuring and analyzing the photocurrent of the photodetector and adjusting via an electronic circuit the delays between the channels (column 2, lines 30-39 and 61-67; column 3, lines 1-19). Adams differs from the claimed invention in that Adams does not specifically disclose that the detector is a low

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frequency photodetector. However, it is well known in the art to monitor an optical signal output from a modulator with a low frequency detector. For example, Epworth discloses to use a low frequency photodetector (fig. 3, detector 31) monitoring the mean optical output power of a modulator 10 with a clock signal of high frequency (column 2, lines 55-67; column 3, line 67 through column 4, line 3). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate in Adams a low frequency photodetector, such as the one discloses by Epworth, in order to measure the average optical output power of the modulator.

Regarding claim 2, Regarding claims 1 and 3, Adams discloses a method for adjusting delays between multiple channels of an optical WDM system including: Demultiplexing the signals with demultiplexer (fig. 1, WDM 110), delaying the individual signals individually between channels (fig. 1, phase controller 111; column 2, lines 45-47) and multiplexing the signals again (fig. 1, WDM 112; column 2, lines 20-25) for the next step; Remodulating the multiplexed signal in a first modulator (fig. 1, modulator 107) with a clock signal of high frequency (fig. 1, electronic data in); Monitoring the remodulated signal in a second modulator (fig. 1, equalizer 101) with a photodetector (fig. 1, PD 118); Measuring, analyzing the photocurrent of the photodetector and adjusting via an electronic circuit the delays between the channels (column 2, lines 30-39 and 61-67; column 3, lines 1-19). Adams differs from the claimed invention in that Adams does not specifically disclose that the detector is a low frequency photodetector. However, it is well known in the art to monitor an optical signal output from a modulator with a low frequency detector. For example, Epworth discloses to use a low frequency

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photodetector (fig. 3, detector 31) monitoring the mean optical output power of a modulator 10 with a clock signal of high frequency (column 2, lines 55-67; column 3, line 67 through column 4, line 3). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate in Adams a low frequency photodetector, such as the one discloses by Epworth, in order to measure the average optical output power of the modulator.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (U.S. Patent US 6,016,374) in view of Epwodh (U.S. Patent US 5,513,030), and further in view of Doerr (U.S. Patent US 5,809,184).

Regarding claim 6, Adams and Epworth have been discussed above in regard with claims 1-3. The modified system of Adams and Epworth differs from the claimed invention in that Adams and Epworth do not specifically disclose that the demultiplexer and photodetector are integrated into an AWG optical component. However, it is well known in the art to integrate a demultiplexer and photodetector in an AWG optical component. For example, Doerr teaches a demultiplexer (fig. 2, AWG 120 (220)) and photodetectors (fig. 2, detectors 103 (203)) that are integrated into an AWG optical device (fig. 2, INP chip 100; column 3, lines 34-39 and 45-51). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an integrated AWG optical component, such as the one disclosed by Doerr, in the modified system of Adams and Epworth in order to build an optical system with high compactness and ease of production.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (U.S. Patent US 6,016,374) in view of Epwodh (U.S. Patent US 5,513,030), and further in view of Ishikawa (U.S. Patent US 5,612,807).

Regarding claims 7 and 8, Adams and Epworth have been discussed above in regard with claims 1-3. The modified system of Adams and Epworth differs from the claimed invention in that Adams and Epworth do not specifically disclose a regeneration device within a telecommunication system. However, it is well known in the art to include a regeneration device in an optical communication system. For example, Ishikawa discloses a regenerator (fig. 27, repeater 22) within an optical communication system. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a regenerator, such as the one disclosed by Ishikawa, in the modified system of Adams and Epworth in order to repair signal impairment to increase transmission distance.

Allowable Subject Matter

7. Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 4 would be allowable since the prior art of record does not teach or suggest in combination that a second demultiplexer is tapped to the output signal of the multiplexer connected to the at least one photodetector for each individual wavelength multiplex, in addition to other cited limitations.

Claim 5 would be allowable since the prior art of record does not teach or suggest in combination that a part of the wavelength multiplexed signals is tapped and feed in a second modulator connected with at least one photodetector and driven by the same clock signals as the modulator, in addition to other cited limitations.

Response to Arguments

8. Applicant's arguments filed February 21, 2006 have been fully considered but they are not persuasive.

Regarding claims 1 and 3, Applicant argues that the transmitter of Adams "does not work with a wavelength grid signal"; "The source is a pulsed laser source (single wavelength)". However, Adams clearly discloses a WDM (fig. 1, WDM 110) to demultiplex the signal, and the demultiplexed signal comprising multiple wavelengths (fig. 1, $\lambda_1, \dots \lambda_n$), which clearly indicates that the system of Adams works with a wavelength grid signal. Applicant further argues, "Epworth does not deal with a WDM system". However, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, Adams discloses a WDM system,

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Epworth is cited to show that it is well known in the art to monitor an optical signal output from a modulator with a low frequency detector, and it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate in Adams a low frequency photodetector, such as the one discloses by Epworth, in order to measure the average optical output power of the modulator. Adams also clearly discloses to “delay” (column 2, lines 45-47) each of the wavelength components individually. It is clear that the combination of Adams and Epworth discloses all the claimed limitations in the claims. Therefore, the rejections of claims 1 and 3 still stand.

Regarding claim 2, the modified claim recites, “monitoring a part of the remodulated signal in a second modulator ...”. The claim language does not specify the type of modulation, the equalizer of Adams reads on the claimed “second modulator” since the signal is “modulated” (combined with the loop back signals and tunably filtered) and detected in the equalizer. Therefore, the combination of Adams and Epworth discloses all the claimed limitations in claim 2 and the rejection of claim 2 still stands.

For the same reasons, the rejections of claims 6-8 also stand.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

qzw
6/2/2006



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